HEADQUARTERS, UNITED STATES FORCES KOREA
UNIT #15237
APO AP 96205-0010

REPLY TO
ATTENTION OF:

FKCC

21 APR 2009

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: United States Forces Korea (USFK) Command Policy Letter #35
Heat Injury Prevention and Management Plan

1. PURPOSE: Provide information to all USFK activities for prevention, management and treatment of heat injuries.

2. DISCUSSION: Heat injury and illness—preventable conditions—continue to threaten the health and the lives of our service members. As the operational tempo increases, training requirements increase, and proper instruction in heat injury prevention can be life saving. Effective heat injury prevention can also make the difference between mission success and failure.

3. Responsibilities: Service members, commanders and leaders at all levels are responsible for preventing individual heat injuries. Although heat injury prevention is a command responsibility, it is the inherent duty of NCO's and supervisors to take every measure necessary to mitigate the risks and hazards that face their active duty personnel and civilians. Therefore,

a. Unit commanders, NCOs and supervisors will

(1) Provide hot weather training classes to all their personnel.

(a) A prepared heat injury prevention class is available at *http://chppm-www.apgea.army.mil/heat/*.

(b) Unit Field Sanitation Teams and/or medics should be utilized to present the training.

(c) Additional references are available at *http://chppm-www.apgea.army.mil/heat/*.

(d) For additional guidance contact your supporting Medicine Detachment (Preventive Medicine) for support with programs of instruction.

b. Utilize their Unit Field Sanitation Teams to monitor heat category and appropriate work-rest cycles during training activities.

c. Ensure appropriate risk reduction measures are maximally implemented during all activities.

4. Health care providers are responsible for:

a. Recognizing and treating heat injuries.

b. Reporting all heat injuries to the 18th MEDCOM Preventive Services Directorate. Reporting may be done telephonically (736-3025) or by faxing a report form to DSN 736-3028. A report form is included in the appendix.

c. Disposition of patients. All patients sustaining heat injuries will be issued a profile IAW paragraph 3-46, AR 40-501, Standards of Medical Fitness, 27 Feb 98.

5. The Wet Bulb Globe Thermometer (WBGT) index will be monitored in all areas where substantial numbers of American forces are stationed when temperatures are above 80 degrees Fahrenheit. The index will be provided, upon telephonic request, to all troop unit/garrison operations offices and other facilities.

a. Preventive Medicine Detachments will provide WBGT monitoring for areas where they are assigned.

b. Local medical health care facilities will perform the measurements in areas where there are no assigned Preventive Medicine assets.

c. Technical assistance with WBGT monitoring is available through all Preventive Medicine Detachments and the Preventive Services Directorate.

6. Safety Office in coordination with supporting Medical Detachments (Preventive Medicine) is responsible for investigations IAW AR 385-40.

7. 18th MEDCOM's Secretary of the General Staff/Public Affairs Officer will coordinate with the media for the following:

a. AFKN – medical minute to address preventive measures in Korea.

b. Local Area Newspapers (Indian Head of Area I, and Morning Calm Weekly) - article describing the impact of heat injuries and preventive measures.

c. Display of Information Paper at following sites:

(1) Commissary

(2) PX

(3) Post Theater

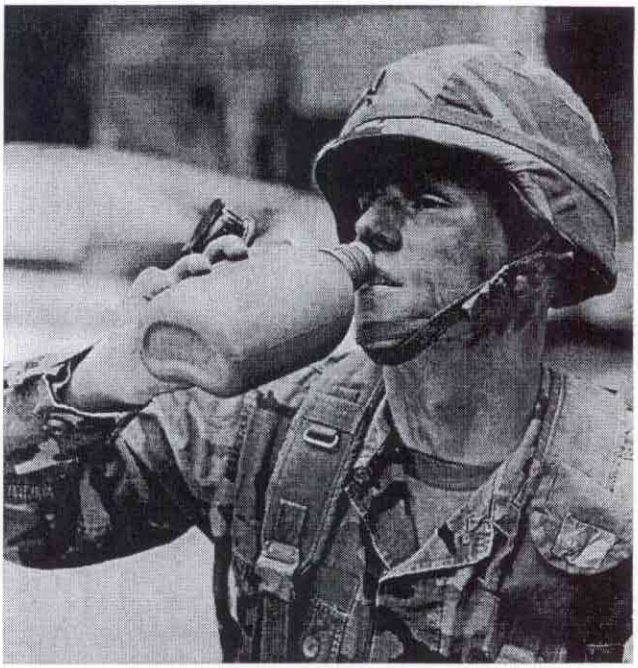
8. Questions concerning this initiative can be addressed to LTC Lee at 736-3036.

LEON J. LAPORTE
General, US Army
Commander

DISTRIBUTION:
A

Enclosure 1

Newspaper Article



Heat injuries are a ***preventable*** cause of lost duty time. And if severe enough, they can cause permanent brain injuries and even death. In 2002, 81 heat injuries occurred in USFK service members and dependents. One of these was fatal. Army-wide, there were 1891 injuries reported in 2002. 15 of these injuries were fatal.

Heat injuries are a concern for USFK because summers in Korea are typically very humid. In order to stay cool, your body gets rid of heat by sweating. The heat is removed when the sweat dries. But when it's humid out, the air doesn't dry the sweat as well, so it's harder for your body to stay cool, even if it's only in the 80's.

The Army developed the heat stress index in order to take into account the role of humidity in assessing heat injury risk. Rather than just looking at the temperature outside, the Wet Bulb Globe Thermometer takes into account how sunny it is, and the humidity, too, in order to give you a better idea of how well (or not) your body will be able to keep cool.

Types of Heat Injuries

There are several different types of heat-related illnesses. We are most concerned with preventing the more serious ones—heat exhaustion and heat stroke.

Mild heat illnesses include heat rash and heat cramps. Sunburns are also considered heat-related illnesses. Heat rash and sunburns can make people more susceptible to more serious heat injury because they damage the skin, and interfere with sweating, which is the body's only means of keeping you cool.

Heat cramps occur when people lose too much salt. You can start to get painful muscle cramps. These will often resolve with drinking Gatorade or a similar sports drink.

Serious heat injuries include heat exhaustion and heat stroke. These occur when the body can no longer adequately cool itself. For most people heat exhaustion begins because they lose too much water in sweat, and cannot or do not drink enough to replace it all. You can lose up to 2 litres in sweat an hour, but your stomach can only absorb 1.5 litres an hour max, so it's actually surprising that we don't have more problems with heat.

When people start to get dehydrated from being in the heat too much, they can start to feel dizzy, or really tired. Sometimes they get nauseous and may even throw up. That is really dangerous, because then you can't hydrate yourself enough. At this point though, the person is still conscious, and their body temperature has risen only a few degrees.

If the person doesn't stop what they're doing and work on cooling down and hydrating, they can progress to heat stroke. In heat stroke, the body temperature has risen—often to 105°F or more! This high temperature and extreme dehydration makes some organs start to fail—usually the kidneys and the liver. The brain doesn't get enough blood, and people become disoriented, and often even pass out. They may actually have lost so much fluid that they stop sweating. Sometimes, if it becomes too severe, even the best medical care won't be enough to keep you alive.

Preventing Heat Injuries
There are lots of things people can do in order to be safe in the summer heat:

1. Reschedule strenuous activities for the cooler parts of the day. Don't run during the hottest parts of the day—get it over with in the morning or later in the evening! But if you can't reschedule, at least modify the activity to the greatest extent possible to reduce heat stress.
2. Hydrate, hydrate, hydrate!! Most people don't even drink the 8 glasses of water that are recommended for just ordinary circumstances. And if you drink sodas or coffee, which have caffeine in them, well, caffeine can actually dehydrate you, so you need to drink even more water to stay hydrated then. Also, people who use supplements or over-the-counter diet aids, like Ripped Fuel and Diet Fuel, are actually getting caffeine and they may not realize it. Alcohol also dehydrates you. If you drink alcohol or use supplements, you have to be sure to take in even more water to make up for it, so you don't fall out during PT.
3. Eat your meals! It's important to take in enough electrolytes and other nutrients in addition to staying hydrated. Skipping meals can lead to disaster.
4. Pay attention to the weather. Wet Bulb Globe Thermometer monitoring is how we calculate the heat stress index. The index defines the standard for adjusting activity (depending on mission requirements). ***Every*** unit must have a Field Sanitation Team identified on orders and trained up, to include using the WBGT. That way commanders have the information they need to help keep their soldiers safe.
5. Adhere to the recommended work-rest cycles. During rest periods, try to go to a cool, air-conditioned area if at all possible.
6. Use sunscreen. Sunburns damage your skin and make it harder for your body to cool itself properly. With time, they cause worse wrinkles, and more worrisome--skin cancer. Use sunscreen with an SPF rating of at least 30, and remember to reapply it periodically. After all, if it sweats off of you, it's not doing any good.
7. If you're not feeling well, avoid strenuous activities. Ill people are more susceptible to heat injuries, either because they aren't eating and drinking well, but sometimes also because they may be taking medications that can dehydrate them.
8. Dress for the weather. Wearing unnecessary layers only traps the heat, and makes it harder to stay cool.
9. If you're not used to the humidity—give yourself time to acclimatize. The process of acclimatization means that your body is learning how to stay cool while being active under new heat stresses. It takes at least **two weeks** to acclimate. But acclimatization is accomplished by being out in the elements, not just moving from an air-conditioned office to an air-conditioned car to an air-conditioned apartment. Also, a person acclimating should not be expected to perform at the same intensity level as someone who is already adjusted.

The majority of heat injuries occur during the early morning hours, mostly under category 0 or 1 conditions. This is because heat injuries are usually the result of cumulative heat stress, like over 3 or 4 days. People are out in the heat, and end up not being able to stay adequately hydrated, until finally it catches up with them.

Also, running is a unique activity in that it is really, really good at generating heat, and most PT involves a lot of running.

If You Develop Symptoms from the Heat....
Get to a cool environment and drink some cool water. Get medical care as soon as possible.

The US Army Centers for Health Promotion and Preventive Medicine (CHPPM) has an excellent website with links to all sorts of resources for soldiers, commanders and health care providers at: http://chppm-www.apgea.army.mil/heat/ .

Enclosure 2

Information Paper
Heat Injury Prevention

Summers in the Republic of Korea tend to be hot and very humid, which can place unprepared personnel at risk for serious injury and even death. Throughout the Army, heat injuries continue to be a preventable cause of soldier injury and even death. In 2002, 81 heat injuries occurred among USFK service members and dependents. One was fatal. Army-wide, 15 service members died from heat injuries.

Military operations must continue, regardless of weather conditions. This means training and preparation for the prevention of heat injuries should be a high priority on every commander's training schedule. Soldiers should be trained in utilizing work-rest tables and hydration standards, signs and symptoms of heat injuries, and use of the buddy system to prevent injury. Despite all efforts, environmental casualties will occur in military operations, however Commanders/Supervisors should never allow a casualty to become an environmental injury.

Heat injuries consist of:

- Sunburn
- Heat cramps
- Heat exhaustion
- Heat stroke

Preventive measures to reduce the risk of heat injury include:

- Minimizing the use of caffeine, alcohol, and dietary supplements
- Good nutrition and adequate hydration

Commanders can reduce their unit's risk for heat injury by:

- Utilizing Unit Field Sanitation Teams to monitor Heat Category and Work-Rest Cycles
- Allowing new arrivals at least two weeks to acclimate to the heat and humidity of a Korean summer by gradually increasing physical during this period until they are performing at the same level as others in the unit.
- Scheduling high-risk activities, such as ruck marches, runs and PT tests for cooler parts of the day. Water should be readily available to all participants.
- Reassessing the status of the whole unit as soon as even one suspected environmental casualty occurs during an activity.

http://chppm-www.apgea.army.mil/heat/ is a web page filled with excellent resources on heat injury prevention and treatment. All are encouraged to make use of the information and briefings available there.

Leaders should make use of the following work-rest cycle and hydration guides when planning and conducting unit activities:

Fluid Replacement and Work/Rest Guide

Acclimatized (after approx two weeks training) Wearing BDU, Hot Weather

		Easy Work		Moderate Work		Hard Work	
Heat Category	**WBGT Index, (F°)**	**Work/ Rest**	**Water Intake (Qt/h)**	**Work/ Rest**	**Water Intake (Qt/h)**	**Work/ Rest**	**Water Intake (Qt/h)**
1	78-81.9	NL	½	NL	¾	40/20 min	¾
2 (Green)	82-84.9	NL	½	50/10 min	¾	30/30 min	1
3 (Yellow)	85-87.9	NL	¾	40/20 min	¾	30/30 min	1
4 (Red)	88-89.9	NL	¾	30/30 min	¾	20/40 min	1
5 (Black)	> 90	50/10 min	1	20/40 min	1	10/50 min	1

- The work-rest times and fluid replacement volumes will sustain performance and hydration for at least 4 h of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/h) and exposure to full sun or full shade (±¼ qt/h).
- NL= no limit to work time per hour.
- Rest means minimal physical activity (sitting or standing), accomplished in shade if possible.
- **CAUTION:** Hourly fluid intake should not exceed 1½ quarts.
- Daily fluid intake **should not exceed 12 quarts.**
- If wearing body armor add **5°F** to WBGT in humid climates
- If wearing NBC clothing (MOPP 4) add **10°F** to WBGT.

Easy Work = Walking hard surface 2.5 mph <30# load, Weapon maintenance, Marksmanship training
Moderate Work = Patrolling, Walking sand 2.5 mph no load, Calisthenics
Hard Work = Walking sand 2.5 mph w/load, Field assaults

Continuous Work Duration and Fluid Replacement Guide

Acclimatized (after approx two weeks training) Wearing BDU, Hot Weather—and no prior heat injury!

		Easy Work		Moderate Work		Hard Work	
Heat Category	**WBGT Index, (F°)**	**Work (min)**	**Water Intake (Qt/h)**	**Work (min)**	**Water Intake (Qt/h)**	**Work (min)**	**Water Intake (Qt/h)**
1	78-81.9	NL	½	NL	¾	70	1
2 (Green)	82-84.9	NL	½	150	1	65	1 ¼
3 (Yellow)	85-87.9	NL	¾	100	1	55	1 ¼
4 (Red)	88-89.9	NL	¾	80	1 ¼	50	1 ¼
5 (Black)	> 90	180	1	70	1 ½	45	1 ½

- NL can sustain work for at least 4 hours in the specified heat category.
- Fluid needs can vary based on individual differences (± ¼ qt/hr) and exposure to full sun or full shade (± ¼ qt/hr).

Enclosure 3

HEAT INJURIES - Clinical Description and Case Definitions

ICD-9: **992.0 (Heat Stroke)**
992.3 (Heat Exhaustion)

INCLUDES: Service member cases only

Clinical Description

1. **Heat Exhaustion:** Occurs during exercise in hot conditions, resulting in collapse or inability to continue work.

2. **Heat Stroke**: Characterized by clinically significant tissue damage—especially hepatic injury, renal damage, DIC, rhabdomyolysis and encephalopathy. Altered mental status, caused by heat injury to the brain, is common

Clinical Case Definition

1. **Heat Exhaustion:** A variable combination of dizziness, fatigue, headache, thirst and GI distress with normal or slightly altered mental status and elevated core body temperature. Reportable cases are those that require medical intervention and result in more than 4 hours of lost duty time.

2. **Heat Stroke**: Significantly altered mental status at presentation and/or elevation of muscle (CPK) and hepatic (ALT, AST) enzymes at 24 hours.

Laboratory Criteria for Diagnosis: None. Heat injuries are diagnosed clinically.

Case Classification: *Confirmed:* A case that meets the case definition.
Note: all heat injuries that require medical intervention or result in lost duty time are reportable.

Required Comments: Note if duty related.

Additional Considerations: Document the patient's core body temperature, precipitating activities, and all medications or supplements consumed in the 24 hours prior to event.

Enclosure 4—Reportable Medical Events Form

EAMC FORM 600, NOV 2001

18th MEDCOM IHO REPORTABLE EVENTS WORKSHEET

PATIENT DATA

Last Name | **First Name**

FMP | **Social Security Number** ___ – ___ – ____ | **Date of Birth** Day / Month / Year

Residence - City or Location (*e.g.* Yongsan)

Gender: ○ MALE ○ FEMALE

APO

Race: ○ WHITE ○ ASIAN ○ BLACK ○ AM. INDIAN ○ HISPANIC ○ OTHER

Category* | **Grade** | **Unit** | **UIC**

Unit Location - (*e.g.* CP Casey) | **Duty Phone** ___ – ____

REPORTING SOURCE

Submitting Health Care Provider: _____ **Comments/Additional Information:**

CHN/Clinic: _____

Phone #: _____

1. Refer to the list on the back of this form to determine if a patient's disease/condition is reportable.
2. Complete one worksheet per disease (vs. per patient in cases of multiple diagnoses) while the patient is still present.
3. Indicate if the disease/condition is suspected or confirmed and what testing has been done (i.e., culture, serology, etc.). Community Health Nursing personnel will help track the results.
4. Diseases/conditions followed by an asterisk (*) also require immediate telephone reporting to your Area Community Health Nurse to initiate disease control measures (Area I 730-6796, Area II 725-5128, Area III 753-8355, Area IV 764-4819). After duty hours, contact the Community Health Nursing Consultant through the 121st General Hospital Emergency Department.
5. Forward completed worksheets to Commander, 18th MEDCOM, Attn: EAMC-CHN, APO AP, 96205-0020 or FAX to 736-3028.

HEAT OR COLD INJURIES ONLY

Ambient temperature ___.__ °C / °F | **WBGT** ___.__ | **Previous Heat or Cold injury:** ○ YES ○ NO

Wind Speed ___ MPH | **Body Part or Organ System Affected:** | **Multi-system involvement:** ○ YES ○ NO

Rectal temperature ___.__ °C / °F | **P3 Profile initiated for heat Exhaustion** ○ YES ○ NO

MALARIA CASES ONLY

Pertinent Travel: ○ YES ○ NO | **Country #1** _____ **Country #2** _____

Malaria Chemoprophylaxis: ○ YES ○ NO | **Prophylaxis #1** _____ **Prophylaxis #2** _____

18th MEDCOM IHO REPORTABLE EVENTS WORKSHEET

DISEASE DATA

Diagnosis (See Reverse for Malaria & Heat/Cold Injuries)

Onset of Symptoms

Day ☐☐ Month ☐☐ Year ☐☐☐☐

Confirmed:
- ○ YES
- ○ NO
- ○ PENDING

Method of Confirmation:
- ○ CLINICAL
- ○ CULTURE
- ○ SLIDE
- ○ BIOPSY
- ○ SEROLOGY
- ○ OTHER

Admitted:
- ○ YES
- ○ NO

Date of Admission

Day ☐☐ Month ☐☐ Year ☐☐☐☐

REPORTABLE CONDITIONS LISTS

TRI-SERVICE

Amebiasis
Anthrax
Biological warfare agent exposure
Botulism
Brucellosis
Campylobacter
Carbon monoxide poisoning
Chemical agent exposure
Chlamydia
Cholera*
Coccidiomycosis
Cold injury, frostbite
Cold injury, hypothermia
Cold injury, immersion type
Cold weather injury, unspecified
Cryptosporidiosis*
Cyclospora
Dengue fever*
Diphtheria*
E. coli O154:H7*
Ehrlichiosis
Encephalitis*
Febrile vesicular rash*
Filariasis
Giardiasis
Gonorrhea
Haemophilus influenza, invasive
Hantavirus infection
Heat exhaustion
Heat stroke
Hemorrhagic fever
Hepatitis A, Acute
Hepatitis B, Acute*
Hepatitis C, Acute
Influenza
Lead poisoning
Legionellosis
Leishmaniasis, cutaneous*
Leishmaniasis, mucocutaneous*
Leishmaniasis, unspecified*
Leishmaniasis, visceral*
Leprosy
Leptospirosis
Listeria
Lyme disease
Malaria, falciparum
Malaria, malariae
Malaria, ovale
Malaria, unspecified
Malaria, vivax
Measles*
Meningococcal dis., Meningitis
Meningiococcal dis., Septicemia
Mumps*
Pertussis*
Plague*
Pneumococcal pneumonia
Poliomyelitis*
Q fever
Rabies, human
Relapsing fever
Rheumatic fever, Acute
Rift Valley fever
Rocky Mountain Spotted fever
Rubella*
Salmonellosis
Schistosomiasis*
Shigellosis*
Smallpox
Streptococcus, Grp. A, invasive
Syphilis, congenital
Syphilis, latent
Syphilis, late (tertiary)
Syphilis, primary&secondary
Syphilis, unspecified
Tetanus*
Toxic shock syndrome
Trichinosis
Trypanosomiasis
Tuberculosis, pulmonary
Tularemia
Typhoid fever
Typhus fever
Urethritis, non-gonococcal
Vaccine, adverse event
Varicella, active duty only
Yellow Fever

KOREA-SPECIFIC

Asbestosis
Chancroid
Contagious disease in day care
Granuloma inguinale
HIV/AIDS
Lymphogranuloma venereum
Melioidosis
Pelvic inflammatory disease
Rash outbreak
Rhabdomyolysis
Trichomoniasis
URI outbreak

KOREA Ministry of Health and Welfare Required

African sleeping sickness*
Angiostrongyliasis
Babesiosis*
Chagas disese
Dengue fever
Ebola fever*
Echinococcosis
Gnathostomiasis
Lassa fever*
Marburg fever*
Newly emerging syndromes*
- Acute neurological disorders
- Acute respiratory symptom
- Acute diarrhea
- Acute hemorrhagic fever
- Acute jaundice

Paratyphoid fever*
Pinta*
Scarlet fever
Vancomycin Resistant Staphylococcus Aureus
Vibrio vulnificus infection
Yaws*

CATEGORY CODES

A11	Army active duty	F41	DEP Air Force active duty	N11	Navy active duty
A31	Army retired	F43	DEP Air Force retired	N31	Navy retired
A41	DEP Army active duty	M11	Marine active duty	N41	DEP Navy active duty
A43	DEP Army retired	M31	Marine retired	N43	DEP Navy retired
F11	Air Force active duty	M41	DEP Marine active duty	K59	Civilian/DEP Civilian
F31	Air Force retired	M43	DEP Marine retired	K79	Local National

PRIVACY ACT INFORMATION

Authority: Section 133, Title 10, United States Code (10 USC 133).

Purpose: The purpose of this form is to compile sole vital personal information concerning communicable diseases and injuries occurring among Department of Defense personnel and family members stationed or operating in Korea.

Routine Uses: Used to monitor for the emergence of specific communicable diseases or outbreaks which pose a public health threat and to prepare data for inclusion in the U.S. Army Medical Surveillance System.

Disclosure: The requested information is mandatory for compliance with U.S., Host Nation and Army disease reporting laws and regulations. Failure to provide the requested information will jeopardize effective public health action and contribute to higher disease and injury rates.

Enclosure 5

SUGGESTED HEAT CASUALTY RISK REDUCTION MEASURES

Physical Fitness. Physical fitness is the single most important factor in preventing heat casualties. Commanders are responsible for the physical fitness of their soldiers and the conditioning program required to optimize fitness. Physical fitness must be compared with the task to be accomplished (duration, intensity, and load). Heat illness occurs primarily when a soldier tries to exceed his/her current physical and medical capability. Soldiers without demonstrated appropriate levels of physical fitness (e.g., new soldiers) must undergo progressive physical conditioning before attempting strenuous physical events in hot weather.

Water replacement. Adequate water intake is an important factor in preventing heat casualties. Fluid replacement guidelines will be used to estimate the drinking water requirements for personnel based on activity and heat category. Drinking is the soldier's personal responsibility, but it is the commander's responsibility to supervise and ensure the soldier is hydrating in proper amounts. Overhydration (>1.5 quarts per hour, or >12 quarts per day) must also be avoided.

Acclimatization. Acclimatization is necessary to permit the body to reach and maintain efficiency in its cooling process. Acclimatization begins with the first exposure and is fairly well developed within 4-5 days in highly fit individuals, with almost complete acclimatization in two weeks. During acclimatization work should be accomplished during the cooler hours of the day while alternating work with rest periods. First day exposure should not exceed moderate hot conditions [less than 85°F Wet Bulb Globe Temperature (WBGT)], and should allow rest periods in shade for at least five minutes, alternating with no more than 25 minutes of easy/moderate work in the heat. Continued moderate work in the heat for 2-4 hours per day will achieve maximum acclimatization. The level of work in the heat can be slowly progressed up to the limits in the work-rest chart at the end of 2 weeks. Acclimatization does not reduce, but may increase, water requirements, and it is nullified by sleep loss, dehydration, and certain medications/dietary supplements.

Medical condition. Soldiers who are more prone to heat casualties should be closely monitored and perhaps limited in level of activity. These include those who are overweight, dieting, have chronic medical conditions, are taking medications (such as antihistamines), have had recent illness (e.g., fever, acute infections, immunization reactions, vomiting, or diarrhea), have had alcohol intake within past 24 hours, use ephedrine alkaloid- or hormone-containing dietary supplements, or have been past heat casualties. Medical consultation should be utilized to determine appropriate levels of physical activity for these personnel.

Replacement of salt loss. Salt replacement in most cases is adequately accomplished through consumption of all meals. Salt requirements decrease with acclimatization. Use of salt tablets is not permitted. When heavy sweating may exceed 60-90 minutes, consider consuming a carbohydrate-electrolyte beverage similar to half-strength sports drinks (e.g., during this period alternate between drinking a sports drink and water).

Schedule modification. Work schedules must be modified to fit the environmental condition and the physical/medical fitness of the soldier. Alternating work and rest periods will optimize individual productivity during hot weather. Perform heavy work in the cooler hours of the day, such as early

morning or late evening. Consider holding formations for shorter periods and out of direct sunlight during hot weather. March soldiers over grass rather than pavement. Conduct field lectures and break periods in the shade or in well-ventilated areas.

Clothing. Exceptions to the prescribed wear of uniforms may be authorized to preserve soldier health. Clothing and equipment should be worn so as to permit free circulation of air between the uniform and the body. Clothing should be loose fitting at the neck, wrists, and ankles. With Command permission, uniform modifications such as rolling up sleeves, unbuttoning or removing the battle dress uniform (BDU) shirt, or unblousing the BDU pants may be implemented. Reduction in layers of clothing or removal of Kevlar assists in reducing body temperature. MOPP gear and body armor are especially heat-retentive (add 10° to the WBGT reading).

Diuretics, dietary supplements, and medications. Caffeine and alcoholic beverages have diuretic properties, which increase the risk of dehydration. Some medications and have been associated with increased heat injury. Personnel using antihistamines, cold preparations, or blood pressure medications are at higher risk for becoming a heat casualty. Soldiers taking any medications or dietary supplements shall inform their supervisors, and be directed to seek medical clearance.

Enclosure 6

SUGGESTED RISK REDUCTION MEASURES FOR TIMED ROAD MARCHES AND RUNS GREATER THAN 5 MILES

Since timed road marches under combat loads and runs greater than 5 miles exceed the definition of hard work, the inherent risk will always be assumed to remain high regardless of the environmental conditions or mitigating actions. Casualties can be minimized by:

1. Commanders promoting physical conditioning programs that follow guidelines set forth in FM 21-18 and FM 21-20. Compliance with the road march conditioning program will, after a 30-day preparatory training period, produce a soldier who can march 12 miles in less than 3 hours loaded to about 60 pounds, when energy expenditure at that rate would cause exhaustion in 2 ½ hours for soldiers who have not received special conditioning training.

2. Adequate hydration and consumption of well-balanced meals the day prior to event. Individuals should consume recommended amounts of water the day prior to (evening) and in the morning (1-2 hours prior to event).

3. Establishing a re-hydration plan for the event, with strategically placed water points every two-miles.

4. Limiting strenuous physical activity and heat stress exposure during the entire day prior to the event.

5. Setting the start time for the event during the coolest part of the day to maximize exposure to the lowest heat category.

6. Modifying uniform to enhance cooling such as; unblousing BDU pants, unbutton BDU top, or removal and carry of helmet (kevlar).

7. Monitor the heat index along the event route. Ensure communication of heat index updates can be communicated between monitors and leadership.

8. Ensuring participants are actually consuming appropriate amounts of water (usually 1 quart per hour but no more than 1.5 quarts per hour) along the route. (EXAMPLE: During road marches have soldiers slightly open and invert their canteen to validate consumption. Soldiers who have water remaining in their canteen at checkpoints will consume remaining water prior to continuation of event. Persons not consuming sufficient water should be removed from the event.)

9. Avoid the use of a dietary supplements.

10. Medically evaluating all participants at checkpoints to identify signs of confusion, disorientation, etc. Trained medical providers will remove soldiers displaying signs of heat injury from the course for further evaluation before being allowed to continue. Confused or disoriented personnel will be removed. Rectal temperatures up to 104°F are common without heat stroke, but personnel with a rectal temperature greater than 105°F will be removed.

11. Removing participants who are more than six minutes behind the pace setter (in a 12-mile road march) at the halfway point.

12. Having onsite medical support and transportation readily available. Medical support will include the capability for managing mass casualties with ACLS, active cooling, intravenous (IV) rehydration, and immediate evacuation to a hospital. Treatment should begin in the field and continue during transport to the hospital.

Enclosure 7

Script for AFN Interview
Heat Injury Prevention

How common are heat injuries?

Last year 81 heat injuries occurred among USFK service members and dependents, one of which was fatal. Army-wide, however, there were 1891 heat injuries reported in 2002. 15 of these injuries were fatal.

Why is this important?

Heat injuries are a preventable cause of lost duty time. If severe enough, people can suffer permanent health problems.

Why do people get heat injuries here in Korea?

Summers in Korea are typically very humid. In order to stay cool, your body gets rid of heat by sweating. The heat is removed when the sweat dries. But when it's humid out, the air doesn't dry the sweat as well, so it's harder for your body to stay cool, even if it's only in the 80's.

That's why the Army uses a heat stress index. Rather than just looking at the temperature outside, the Wet Bulb Globe Thermometer takes into account how sunny it is, and the humidity, too, in order to give you a better idea of how well (or not) your body will be able to keep cool.

So what is a heat injury?

There are several different types of heat-related illnesses. We are most concerned with preventing the more serious ones—heat exhaustion and heat stroke.

Mild heat illnesses include heat rash and heat cramps. Sunburns are also considered heat-related illnesses. Heat rash and sunburns can make people more susceptible to more serious heat injury because they damage the skin, and interfere with sweating, which is the body's only means of keeping you cool.

Heat cramps occur when people lose too much salt. You can start to get painful muscle cramps. These will often resolve with drinking Gatorade or a similar sports drink.

So what is heat exhaustion and heat stroke?

These occur when the body can no longer adequately cool itself. For most people it starts because they lose too much water in sweat, and cannot or do not drink enough to replace it all. You can lose up to 2 litres in sweat an hour, but your stomach can only absorb 1.5 litres an hour max, so it's actually surprising that we don't have more problems with heat.

When people start to get dehydrated from being in the heat too much, they can start to feel dizzy, or really tired. Sometimes they get nauseous and may even throw up. That is really dangerous, because then you can't hydrate yourself enough. At this point though, the person is still conscious, and their body temperature has risen only a few degrees.

If the person doesn't stop what they're doing and work on cooling down and hydrating, they can progress to heat stroke. In heat stroke, the body temperature has risen—often to 105°F or more! This high temperature and extreme dehydration makes some organs start to fail—usually the kidneys and the liver. The brain doesn't get enough blood, and people become disoriented, and often even pass out. They may actually have lost so much fluid that they stop sweating. Sometimes, if it becomes too severe, even the best medical care won't be enough to keep you alive.

So how do we keep that from happening?

There's lots of things people can do in order to be safe in the summer heat.

1. Reschedule strenuous activities for the cooler parts of the day. I keep seeing people running during the hottest parts of the day. But if you can't reschedule, at least modify the activity to the greatest extent possible to reduce heat stress.

2. Hydrate, hydrate, hydrate!! Most people don't even drink the 8 glasses of water that are recommended for just ordinary circumstances. And if you drink sodas or coffee, which have caffeine in them, well, caffeine can actually dehydrate you, so you need to drink even more water to stay hydrated then. Also, people who use supplements or over-the-counter diet aids, like Ripped Fuel and Diet Fuel, are actually getting caffeine and they may not realize it. Alcohol also dehydrates you. If you drink alcohol or use supplements, you have to be sure to take in even more water to make up for it, so you don't fall out during PT.

3. Eat your meals! It's important to take in enough electrolytes and other nutrients in addition to staying hydrated. Skipping meals can lead to disaster.

4. Pay attention to the weather. Wet Bulb Globe Thermometer monitoring is how we calculate the heat stress index. The index defines the standard for adjusting activity (depending on mission requirements). Every unit should have a Field Sanitation Team identified on orders and trained up, to include using the WBGT. That way commanders have the information they need to help keep their soldiers safe.

5. Adhere to the recommended work-rest cycles. During rest periods, try to go to a cool, air-conditioned area if at all possible.

6. Use sunscreen. Sunburns damage your skin and make it harder for your body to cool itself properly. With time, they cause worse wrinkles, and more worrisome--skin cancer. Get one with an SPF rating of at least 30, and remember to reapply it periodically. After all, if it sweats off of you, it's not doing any good.

7. If you're not feeling well, avoid strenuous activities. Ill people are more susceptible to heat injuries, either because they aren't eating and drinking well, but sometimes also because they may be taking medications that can dehydrate them some.

8. Dress for the weather. Wearing unnecessary layers only traps the heat, and makes it harder to stay cool.

9. If you're not used to the humidity—give yourself time to acclimatize. The process of acclimatization means that your body is learning how to stay cool while being active under new heat stresses. It takes at least two weeks for someone to acclimate. But acclimatization is accomplished by being out in the elements, not just moving from an air-conditioned office to an air-conditioned car to an air-conditioned apartment. However, a person acclimating should not be expected to perform at the same intensity level as someone who is already adjusted.

I've heard it doesn't have to be hot for heat injuries to happen. Why not?

You're absolutely right. The majority of heat injuries occur during the early morning hours, mostly under category 0 or 1 conditions. This is because heat injuries are usually the result of cumulative heat stress, like over 3 or 4 days. People are out in the heat, and end up not being able to stay adequately hydrated, until finally it catches up with them.

Also, running is a unique activity in that it is really, really good at generating heat, and most PT involves a lot of running.

So what if one of my buddies starts to get sick from the heat?

Get them to a cool environment and have them drink some cool water. Get them medical care as soon as possible.

The US Army Centers for Health Promotion and Preventive Medicine (CHPPM) has an excellent website with links to all sorts of resources for soldiers, commanders and health care providers at: http://chppm-www.apgea.army.mil/heat/ .

Enclosure 8: Heat Injury Prevention Card for Soldiers

Heat Stress Card
Fluid Replacement Guidelines for Warm Weather Training Conditions

Acclimated after approx. two weeks training wearing BDU, hot weather

High Risk for Heat Illness:

☐**Not acclimatized** to heat
❖ need 10-14 days to become adequately acclimated!!
☐Poor fitness
☐Exceeds Body Fat Standard
☐Cumulative inadequate hydration (day to day)
☐ Minor illness (cold symptoms, sore throat, low grade fever)
☐Taking drugs/supplements/dietary aids, ex: allergy or cold remedies, Ephedra supplement
☐Use of alcohol in the last 24 hours
☐Prior history of heat illness (any heat stroke, or >2 episodes of heat exhaustion)
☐Skin disorders such as heat rash and sun burn which prevent effective sweating
☐Age > 40 years

The more factors, the higher the risk!!

Do:

Maintain the buddy system to look out for each other.
Observe soldiers drinking water in required amounts not to exceed 11.2 quarts per hour or 12 quarts per day.
Ensure adherence to work-rest cycle in heat.
Ensure soldiers are well-hydrated before starting!.
Ensure soldiers have adequate time to eat and drink.
Encourage soldiers to eat all meals for needed salts.

Easy Work	Moderate Work	Hard Work
• Weapon Maintenance • Walking Hard Surface at 2.5 mph, < 30 lb Load • Marksmanship Training • Drill and Ceremony	• Walking Loose Sand at 2.5 mph, No Load • Walking Hard Surface at 3.5 mph, < 40 lb Load • Calisthenics • Patrolling • Individual Movement Techniques, i.e. Low Crawl, High Crawl, etc.	• Walking Hard Surface at 3.5 mph, ≥ 40 lb Load • Walking Loose Sand at 2.5 mph with Load • Field Assaults

- The work-rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/h) and exposure to full sun or full shade (± ¼ qt/h).
- **NL** = no limit to work time per hour.
- **Rest** means minimal physical activity (sitting or standing), accomplished in shade if possible.
- ***CAUTION: Hourly fluid intake should not exceed 1½ quarts.***
  Daily fluid intake should not exceed 12 quarts.
- If wearing body armor add **5°F** to WBGT in humid climates
- If wearing NBC clothing (MOPP 4) add **10°F** to WBGT.

Heat Category	WBGT Index, F°	Easy Work		Moderate Work		Hard Work	
		Work/ Rest	*Water Intake (Qt/H)*	*Work/ Rest*	*Water Intake (Qt/H)*	*Work/ Rest*	*Water Intake (Qt/H)*
1	78° - 81.9°	NL	½	NL	¾	40/20 min	¾
2 (GREEN)	82° - 84.9°	NL	½	50/10 min	¾	30/30 min	1
3 (YELLOW)	85° - 87.9°	NL	¾	40/20 min	¾	30/30 min	1
4 (RED)	88° - 89.9°	NL	¾	30/30 min	¾	20/40 min	1
5 (BLACK)	> 90°	50/10 min	1	20/40 min	1	10/50 min	1

Warning Signs and Symptoms of Heat Stress

With any of the below symptoms or signs, immediately call for medical evaluation by a 91W (Medic). If 91W is not immediately available, call for Medevac or ambulance.

INDICATIONS OF POSSIBLE HEAT ILLNESS

MORE COMMON SIGNS / SYMPTOMS	IMMEDIATE ACTIONS
• Dizziness • Headache • Dry mouth • Nausea • Unsteady walk • Weakness • Muscle cramps	• Remove from training • Allow casualty to rest in shade • Take sips of water • While doing the above, call for Medic evaluation of the soldier (Medic will monitor temperature and check for mental confusion) • If no medic is available call for ambulance or Medevac
SERIOUS SIGNS/ SYMPTOMS	**Immediately call Medevac or ambulance for emergent transport while doing the following:**
• Hot body, high temperature • Confusion (Do Mental Status Assessment) • Vomiting • Involuntary bowel movement • Convulsions • Weak or rapid pulse • Unresponsiveness, coma	• Lay person down in shade with feet elevated until Medevac or ambulance arrives • Undress as much as possible • Pour cool water over person and fan • Give **sips** of water while awaiting ambulance (if conscious) • Monitor airway and breathing until ambulance or Medevac arrive

MENTAL STATUS ASSESSMENT

A sign that the soldier is in a serious life-threatening condition is the presence of mental confusion (with or without increased temperature). Anyone can do a mental status assessment asking some simple questions

Call for emergency Medevac or ambulance if any of the following exist:

What is your name?
(Does not know their name.)

What month is it? What year is it?
(Does not know the month or year.)

Where are we/you?
(Does not know the place where they are at.)

What were you doing before you became ill?
(Does not know the events that led to the present situation.)

Also see http://chppm-www.apea.army.mil/heat for electronic versions of this document and other heat injury prevention resources.

Enclosure 9: Heat Injury Prevention Card for Leaders

Heat Injury Prevention Tips

- **Physical fitness** is the key factor in preventing heat injuries.
- Allowing opportunity for **water replacement** is essential.
- New soldiers may not be fit soldiers; gradually increase their activity over two weeks to acclimate them to the heat & humidity.
- Being overweight, dieting, taking certain medications or supplements, recent illness, and drinking alcohol increases likelihood of heat injury.
- **Reduce Risks**: Schedule heavy work during cooler parts of the day.

Work-Rest Cycles

Easy Work	Moderate Work	Hard Work
• Weapon Maintenance • Walking Hard Surface at 2.5 mph, < 30 lb Load • Marksmanship Training • Drill and Ceremony	• Walking Loose Sand at 2.5 mph, No Load • Walking Hard Surface at 2.5 mph, < 40 lb Load • Calisthenics • Patrolling • Individual Movement Techniques, i.e., Low Crawl, High Crawl, etc.	• Walking Hard Surface at 2.5 mph, ≥ 40 lb Load • Walking Loose Sand at 2.5 mph with Load • Field Assaults

Heat Category	WBGT Index, °F	Easy Work		Moderate Work		Hard Work	
		Work/Rest	Water Intake (Qt/H)	Work/Rest	Water Intake (Qt/H)	Work/Rest	Water Intake (Qt/H)
1	78° - 81.9°	NL	½	NL	½	40/20 min	¾
2 (GREEN)	82° - 84.9°	NL	½	50/10 min	½	40/20 min	1
3 (YELLOW)	85° - 87.9°	NL	½	40/20 min	¾	30/30 min	1
4 (RED)	88° - 89.9°	NL	¾	30/30 min	¾	20/40 min	1
5 (BLACK)	> 90°	50/10 min	1	20/40 min	1	10/50 min	1

- **NL** = no limit to work/hour.
- **Rest** means minimal physical activity (sitting or standing),in shade if possible.
- ***CAUTION: Hourly fluid intake should not exceed 1.5 quarts. Daily fluid intake should not exceed 12 quarts.***
- If wearing body armor add **5°F** to WBGT in humid climates.
- If wearing NBC clothing (MOPP4) add **10°F** to WBGT.